

## WHAT IS CLAIMED IS:

1        1. A method for manufacturing a thin film transistor  
2        comprising the steps of:  
3        depositing a non-single crystal semiconductor film on an  
4        insulting substrate;  
5        introducing at least one dopant into whole of said  
6        non-single crystal semiconductor film;  
7        irradiating said non-single crystal semiconductor film  
8        with a laser beam to convert a non-single crystal material of  
9        said non-single crystal semiconductor film into a single crystal  
10       material, resulting in formation of a crystallized semiconductor  
11       film; and  
12       forming transistors of different conductivity types in  
13       said crystallized semiconductor film,  
14       said method being further constructed such that a ratio  
15       between quasi-fermi level of said single crystal material  
16       corresponding to one of said transistors of different  
17       conductivity types and quasi-fermi level of said single crystal  
18       material corresponding to the other of said transistors of  
19       different conductivity types is between 0.5 : 1 and 2.0 : 1.

1       2. The method for manufacturing a thin film transistor  
2       according to claim 1, wherein introducing at least one dopant  
3       into whole of said non-single crystal semiconductor film includes  
4       introducing dopant atoms of one conductivity type into said  
5       non-single crystal semiconductor film corresponding to one of  
6       said transistors of different conductivity types, and  
7       subsequently, introducing dopant atoms of the other conductivity

8 type into said non-single crystal semiconductor film  
9 corresponding to the other of said transistors of different  
10 conductivity types.

1 3. The method for manufacturing a thin film transistor  
2 according to claim 1, wherein introducing at least one dopant  
3 into whole of said non-single crystal semiconductor film includes  
4 introducing dopant atoms of any one of two conductivity types  
5 into whole of said non-single crystal semiconductor film.

1 4. The method for manufacturing a thin film transistor  
2 according to claim 1, wherein introducing at least one dopant  
3 into whole of said non-single crystal semiconductor film includes  
4 introducing said at least one dopant into whole of said non-single  
5 crystal semiconductor film through a protective film formed on  
6 said non-single crystal semiconductor film and wherein  
7 irradiating said non-single crystal semiconductor film with a  
8 laser beam includes removing said protective film from said  
9 non-single crystal semiconductor film and then irradiating said  
10 non-single crystal semiconductor film with said laser beam.

1 5. The method for manufacturing a thin film transistor  
2 according to claim 1, further comprising the step of subjecting  
3 said crystallized semiconductor film to plasma processing and  
4 heat processing with temperatures in the range of 290 to 340  
5 degrees C. between the step of crystallizing said non-single  
6 crystal semiconductor film to form a crystallized semiconductor  
7 non-single crystal semiconductor film and the step of forming  
8 transistors of different conductivity types in said crystallized

9 semiconductor film.

1           6. The method for manufacturing a thin film transistor  
2 according to claim 5, wherein said heat processing is carried  
3 out in an inactive gas atmosphere.